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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,830	06/17/2005	Yvonne Heischkel	271997US0PCT	5858

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EXAMINER	
GILLESPIE, BENJAMIN	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
12/18/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/539,830	HEISCHKEL ET AL.	
	Examiner	Art Unit	
	Benjamin J. Gillespie	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8 and 11-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8 and 11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

1. Claims 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The ranges set forth render claim 13 indefinite because it is not clear as to how the amounts of component (B), (C), (D), and (E) are related to the 100% mixture of alkyoxylated polyol.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-8, and 11-12, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lokai et al ('983) in view of Neuhaus et al ('604). Lokai et al teach a radiation-curable urethane (meth)acrylate and the corresponding process for production (Abstract). The process consists of a) reacting an alkoxylated polyol consisting of trimethylolpropane, trimethylolethane, or pentaerythritol with (meth) acrylic acid in the presence of catalyst, polymerization inhibitor, and solvent that forms an azeotrope with water, wherein the alkoxylated polyol has a range of ethoxylation between 1 and 30 and is present relative to the (meth)acrylic acid in a molar range of 1:1.1 (Col 2 lines 17-18, 61-62, 66-67, col 3 lines 9-12,

col 4 lines 6-17, 50, and col 5 lines 18-20). Furthermore, patentees teach that the esterification reaction may not go to completion (Col 5 lines 26-29).

3. Regarding the removal of water, esterification reactions inherently posses the step of water removal in order to for the reaction to continue. The product of step a) is then neutralized and has the solvent and excess acrylic acid removed by distillation (Col 5 lines 30-31, and 45-46). The purified reaction product is then b) reacted with bisphenol A diglycidyl ether, butanediol diglycidyl ether or pentaerythritol triglycidyl ether in the presence of appropriate catalysts with resulting OH and acid numbers between 40 and 150 mg KOH/g and less than 10 mg KOH/g respectively (Col 6 lines 1-2, 23-25, 34-35, 38-39, 49-50 and col 11 lines 41-43).

4. The reaction product from step b) is then reacted with polyisocyanate in the presence of a catalyst and viscosity modifying reactive diluent, wherein the polyisocyanate consists of hexamethylene diisocyanate and/or isophorone diisocyanate (Col 6 lines 61-63, col 7 lines 23-24, 31-33, col 8 lines 22-24). Finally Lokai et al teach wood coating compositions that comprise the radiation-curable urethane (meth)acrylate (Col 7 lines 64-65). Regarding the claimed compound (K), although patentees teach the inclusion of an unsaturated reactive diluent, there is no teaching to react the polymer with a hydroxylalkyl(meth)acrylate compound.

5. Neuhaus et al teach a radiation-curable urethane acrylate coating, which is the reaction product of polyisocyanate and acrylic acid esters, wherein the resulting composition is useful in coating wood substrates (Abstract; col 7 lines 29-30). Neuhaus et al explain that urethane acrylate compositions which rely on reactive diluents to control the viscosity of the composition in the uncured state required large amounts of diluent, thereby degrading the urethane coating properties as well as increasing unwanted odor (Col 1 lines 20-33). These disadvantages can be

overcome by eliminating reactive diluents, and incorporating a step comprising the reaction of hydroxyl alkyl (meth)acrylates and free NCO groups, thereby allowing the uncured composition to maintain a low viscosity without the need for reactive diluents or solvent (Col 2 lines 12-34, 52-58). Furthermore, the hydroxyalkyl (meth)acrylates also improve the storage stability of the composition.

6. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to replace the reactive diluents of Lokai et al with hydroxyalkyl(meth)acrylates based on the motivation that the resulting composition has improved shelf life, reduced odor, and does not experience other adverse effects caused by the reactive diluents, but it still able to maintain a low viscosity.

7. Claims 1, 3-8, and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lokai et al ('983) in view of Neuhaus et al ('604) and in further view of Paulus et al ('991). Aforementioned, Lokai et al in view of Neuhaus et al render obvious a radiation-curable urethane (meth)acrylate and a method for its production. In particular, the first step of Lokai et al comprises reacting i) trimethylolpropane, trimethylolethane, or pentaerythritol with ii) (meth) acrylic acid in the presence of iii) catalyst, iv) polymerization inhibitor, and v) solvent that forms an azeotrope with water.

8. The alkoxylated polyol has a range of ethoxylation between 1 and 30, is present relative to the (meth)acrylic acid in a molar range of 1:1.5 to 1:1.1, and components iii) and iv) are present in amounts of 3% and 0.5% by weight (Lokai et al: col 4 lines 66-67; col 5 lines 1-2, 23-25). Although, the esterification reaction in the first step may not go to completion, Lokai et al

in view of Neuhaus et al fail to specify amounts of fully, partially esterfied alkoxylated polyol, or completely unreacted (meth)acrylic acid as claimed in claim 13.

9. Paulus et al teach compositions comprising light esters of acrylic acid and/or meth-acrylic acid, which when used in urethanes, are useful in wood coatings (Abstract; col 2 line 38; col 4 lines 52-58). In particular, patentees explain that these esters are generally prepared having an excess of acrylic acid relative to the hydroxyl containing compound, however if it is desired to retain some of the free OH groups, the hydroxyl containing compound are present in excess relative to the acrylic acid (Col 2 lines 42-48). Therefore it would have been obvious to have an excess of hydroxyl containing material relative to the acrylic acid in step one of Lokai et al in view of Neuhaus et al based on the motivation that it preserves free OH groups, necessary to react with the epoxy compounds of step two.

10. Based on the logic for excess OH groups, and the fact that the esterification reaction does not have to go to completion, it would have been obvious to arrive at the ranges of claim 13 because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges in involves only routine skill in the art. *In re Aller,* 105 USPQ 233; *In re Reese* 129 USPQ 402. Similarly, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesh,* 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

11. Applicant's arguments filed 10/30/2007 have been fully considered but they are not persuasive. Applicants argue that Lokai et al ('983) in view of Neuhaus et al ('604) fail to render obvious the claimed invention because it is not clear when the hydroxyl alkyl methacrylates, as

taught by Neuhaus et al, would be added to the reaction system of Lokai et al, and furthermore if said methacrylates are added prematurely, such inclusion would have "marked impact on the properties of the resulting urethane polymer product." Applicants also assert that the proper motivation to combine the teachings of the prior art has not been established based on the disclosures of Lokai et al and Neuhaus et al.

12. Firstly, it is noted that applicants' claims include the limitation stating the hydroxyl alkyl methacrylates are added only after the reaction of the ester polyol and polyisocyanate, however the examiner maintains the position that Lokai et al in view of Neuhaus et al would satisfy the claimed methodology. Neuhaus et al teach that the polyisocyanates are included so that the reaction occurs not only between the hydroxyl methacrylates, but also the alkyoxlated polyol. What's more is that the teachings on column 8 lines 22-24 of Lokai et al state the reactive diluents are mixed with the "(meth)acrylic esters of the invention, containing urethane groups," (emphasis added). The statement: "containing urethane groups," shows that the reactive diluents are included **after** the urethane reaction, which occurs between the alkyoxylated polyol and isocyanate. Therefore, by combining the teachings of Lokai et al and Neuhaus et al, it would have been obvious to include the hydroxyl alkyl methacrylates only after the reaction between the alkoxylated polyol and polyisocyanate has taken place.

13. Regarding applicants arguments directed towards Lokai et al failing to teach mono-esters of (meth)acrylic acid and Neuhaus et al failing to include reactive diluents, applicants appear to be arguing each reference independently, and not in view of each other. The examiner would like to point out that if Lokai et al had taught the inclusion of mono-esters of (meth)acrylic acid,

there would have been no need for a 103(a) combinatory rejection, instead a rejection under 103(a) solely, if not under 102(b).

14. Finally, concerning the discussion of Lokai et al, Neuhaus et al, and applicants' examples, again applicants appear to be arguing the alleged properties of Lokai et al and Neuhaus et al solely, and have not taken into account the combined teaching of both references when comparing the experimental data. Arguing the alleged properties of each reference is not relevant in over coming the 103(a) rejection set forth above because the art was not applied independently. However, even if applicants maintain that the comparison of examples A1 and B2 and the urethanes of Lokai et al and Neuhaus et al are relevant, it should be noted that the discussion of applicants' examples are not persuasive because applicants have only established that each example "seems to be consistent with the disclosure" of respective prior art; applicants have not definitively established that the data is in fact actually representing said prior art, and therefore the arguments are not persuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

B. Gillespie

RABON SERGENT
PRIMARY EXAMINER